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COMMON BUSINESS APPLICATION TEMPLATES WAREHOUSE

Mr Nigel ATKINSON
LMU, United Kingdom

Paper title: INVESTIGATION INTO A WEB-BASED ROTOGRAPHY PRODUCTION WITH PETRI NET CONTROL AND MONITORING

Authors: N.J.R ATKINSON, PROF D. WEBB, PROF K. CHENG

The aim of this research is to investigate the use of rotography images as a user interface for a product database and e-manufacturing. There are three main areas of the research. 1) The interaction between a rotography image and an image driven product database. 2) There is very little interaction from a rotography image other than rotation and translation to either a URL or another rotography image. 3) The linking of a rotography image to manufacturing processes and implementation for the creation of rapid prototyping. 4) The inclusion into the manufacturing process. 5) The use of Petri net modelling, simulation and control, not just for the manufacturing processes, but for stock control and distribution warehouse and sales processes

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Mr Richard BATEMAN
LEEDS METROPOLITAN UNIVERSITY, United Kingdom

Paper title: INTERNET BASED END-USER DESIGN AND E-MANUFACTURING

Authors: RICHARD J BATEMAN AND KAI CHENG

With the rapid growth of the Internet and developments in rapid prototyping technology, now exists the real possibility to create an innovative type of e-manufacturing system where customers can directly design items on their own PCs and then transmit the data to a 'high street' rapid manufacturing facility in the customers own locale, thus minimising the time associated with logistics and delivery. The term devolved manufacture has been employed to describe this concept in e-manufacturing where the actual manufacture is relocated to the customers end of the process rather than passing through an intermediary site. After reviewing the issues and technical challenges involved with such a system, this paper describes the development of such a prototype internet based system and its implementation. Appropriate conclusions are then drawn about future development needs.

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Mr Khalifa BLLAU
LEEDS METROPOLITAN UNIVERSITY, United Kingdom

Paper title: DEVELOPMENT OF A WEB BASED MONITORING AND CONTROL FOR CNC MILLING PROCESSES

Authors: KHALIFA BLLAU, PROF. KAI CHENG

The need of such tool can be used to provide manufactures flexibility and ability to cope with kind of unexpected breakdown is becoming crucial more and more. Especially with the modern manufacturing machines to meet the demand on the market and goods production satisfaction. This paper describes the methods that have been used to develop such a tool.

condition monitoring and remote control system based on the advantage developed tool can be implemented on wide range of manufacturing applications. The developed system is based on different approaches. These approaches have been used to develop one system can be used in the monitoring and control activities.

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Mr Mohamed BOUJELBENE
TOULON-VAR UNIVERSITY, France

Paper title: INTEGRATED PLANNING FOR PRECISION MULTI-AXIS MACHINING OF COMPLEX SURFACES FINISHING

Authors: M. BOUJELBENE, S. TORBATY

In recent years, parametric or sculptured surfaces have been used in a wide variety of applications in the automotive, aerospace, shipbuilding and turbine industries. A parametric surface can be machined with a ball-end cutter in a multi-axis NC machine tool. To reduce the cost of dies and molds, appropriate machining strategy and appropriate cutting conditions are selected to improve the dimensional accuracy, the surface texture and the tool life while fine milling the part. The machining strategy includes the tool path parameters, the cutting orientations. The cutting conditions include the cutting edge geometry, the feed rate and the cutting speeds. In this paper, the performance of different machining strategies under different cutting conditions is experimentally assessed in terms of surface texture, surface roughness, cutting forces, and tool wear. Multi-axis ball-nose end milling of a specific HB 215 mold steel Super Plast (SP 300), widely used for plastic injection mold making, is studied. The study shows the advantages offered by a C1 continuous tool path compared to a linear interpolation.

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Mr Peter BROOMHEAD
BRUNEL UNIVERSITY, United Kingdom

Paper title: THE DEVELOPMENT OF A WEB ACCESSIBLE DATABANK OF MATERIAL BEHAVIOUR CHARACTERISTICS FOR USE IN VIRTUAL DESIGN ENVIRONMENTS

Authors: P BROOMHEAD, J KULON, R J GRIEVE AND D J MYNORS

Continual pressures to reduce time to market and the consequential need to ensure that a product's manufacture and use is correct first time, every time, have led to an increased use of virtual design and manufacturing tools. As part of the design process, it is essential to assess in-service behaviour. However, the cost and time involved in testing is becoming increasingly prohibitive and is being substituted by computer simulation. Increasingly sophisticated CAD based packages or through specialised, typically finite element based, simulation packages. In addition to in-service simulation, there is a need for a requirement, to simulate the manufacturing process. The simulation of processes such as casting, forging, casting, welding and sheet metal forming provides the process engineer with a mechanism by which to assess the manufacturability of a component. The accuracy of results from in-service and process simulation depend on the quality and accuracy of the representation of material behaviour characteristics. This paper discusses the material data requirements of virtual design and manufacturing tools; assesses the data sources and data representation and then moves on to discuss the development of a web accessible databank of material behaviour characteristics for direct linkage to virtual design environments.

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Mr Jian CHEN
SCHOOL OF ART DESIGN & TECHNOLOGY, UNIVERSITY OF DERBY, United Kingdom

Paper title: TABLE RETRIEVE ON THE INTERNET FOR SUPPLY-CHAIN MANAGEMENT SUPPLIER SEARCHING

Authors: JIAN CHEN MIAN HONG WU PATRICK BARBER

Abstract The paper highlights the ongoing research worked aimed at developing a supplier selection expert system, which is a vital area in the ongoing development of manufacturing. The paper outlines the approaches to data retrieving and analysis of tables for supplier information. Normally, tables are used to contain information on the homepage. As a result, the main research work is currently designing an Internet-based search system, which is capable of tracing, and analyzing a large number of user-inputted keywords. To date, the research has produced a basic intelligent search system on the Internet to achieve the information retrieving functions. This system is capable of capturing information from the Internet to identify the correct suppliers. This system is developed around four fundamental functions: o Automatically returns an analysis of search results o Convert different table formats into defined standard table. o Captures the useful information from tables o Provide the potential list of suppliers.

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Dr Xun CHEN
UNIVERSITY OF NOTTINGHAM, United Kingdom

Paper title: REMOTE PROCESS MONITORING THROUGH INTERNET

Authors: X. CHEN, T. LIMCHIMCHOL, S. HUSSAIN, G. LIU

Condition monitoring is a very important aspect of automated manufacturing. A malfunction of a machining process will deteriorate production quality that is no longer acceptable for products. More importantly, a malfunction may cause catastrophic accident if the monitoring system is in place. This would be particularly true for a manless factory. The Internet technology provides an excellent prospect for implementing a monitoring system to machining processes. Two types of monitoring are required for machining processes: parametrical data monitoring, which uses process parameters to present machine status. These parameters include forces, torque, power, vibration, temperature and etc.. The other type of monitoring would be image vision monitoring, which is important for problem confirmation. It can also be used for monitoring tool condition and tool wear. It is noticed that speed of internet communication varies tremendously. Therefore, a machining monitoring system should have great flexibility to cope with such environmental changes. The uncertainty of internet, different strategy should be used for data transfers. An effective machining performance monitoring and diagnosis should ensure smooth information flow. Two layer structures were used. The idea is to capture real-time data to a computer which acts as a server close to the process. When request relevant information, the server will respond accordingly. The information is automatically sent from the server to the remote client and then uses Java to represent results as required. The main benefits of constructing a remote real-time data analysis for machining processes would be (a) production time saving by reducing changes, (b) quality improvement by applying an adequate control strategy according to tool wear situation and (c) effective knowledge acquisition for operational growth and promotion of knowledge sharing at global level. A further benefit of using a surveillance system is its ability to run on any platform.

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Dr Paul CONWAY
LEEDS MET UNIVERSITY, United Kingdom

Paper title: SIGNATURE ANALYSIS TECHNIQUES APPLIED TO AUDIO SIGNAL IDENTIFICATION AND SYSTEM FAULT DETECTION/DIAGNOSIS

Authors: P. A. CONWAY

The technique of signature analysis in electronic fault detection applications established as an engineering tool, one of the more common techniques to transition rates and express these as a Hexadecimal 'Signature' for fault-free work for known fault conditions. The author has a research interest in the field of Engineering, particularly in Forensic Engineering applications for voice 'fingerprint' identification. Such techniques have been identified as having much potential remote acoustic/sound system fault detection applications and also in the area of mechanical failures of (for example) air frame sub-structures using acoustic early warning of aero engine failure, music copyright and 'watermarking' assessment. Current work has indicated that assignment of digital signature to a combination of transition rate analysis, envelope profiling and normalisation/fingerprinting could provide a unique signature assignment technique which significantly enhance techniques currently in general use.

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Mr Liam CRAGG
UNIVERSITY OF ESSEX, United Kingdom

Paper title: APPLICATION OF MOBILE AGENTS IN MULTIPLE ON-LINE ROBOTICS

Authors: LIAM CRAGG, HUOSHENG HU

The ALLIANCE architecture is an established mechanism for fault tolerant multi-robot systems; however since its development has seen exploration into new areas such as Internet and networked robots, the ALLIANCE architecture for use in the Internet teleoperator domain. This paper encapsulating the architecture in mobile agents embedded in multiple networked robots. Mobile agents offer a wide range of beneficial characteristics employed in multiple robot systems. We describe these and examine in experiments how they can extend the adaptability and fault tolerance of ALLIANCE. It is a unifying mechanism which combines the functionality of all other distributed architectures, and a design philosophy which is more intuitive. We are using the development of a teleoperated multiple robot system for nuclear decommissioning in which our mobile agent ALLIANCE implementation provides autonomous task selection.

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Dr Alan CRISPIN
LEEDS METROPOLITAN UNIVERSITY, United Kingdom

Paper title: AGENT BASED GRAPHICAL SIMULATOR FOR TRAINING COMPLEX SYSTEMS

Authors: ALAN CRISPIN, PAUL CLAY, TOM BAYES* AND DAVID REEDMAN

The paper reports on research into the design of an interactive graphical simulation for leather nesting operators. Leather nesting involves cutting components from a material waste. A training simulator allows operators to be trained without wasting digitally scanned parts and hides. A multi-agent system architecture is incorporated into the training simulator to monitor user actions and provide feedback on nesting part quality. The simulator monitors their own domain and reports on any associated actions required. Its delivery of this information using client/server or distributed architectures are considered.

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Mr Karl james DARBYSHIRE
LEEDS METROPOLITAN UNIVERSITY, United Kingdom

Paper title: PUMP ASSET OPERATION AND PERFORMANCE MONITORING
INTERNET

Authors: K J DARBYSIRE AND G WATERWORTH

This paper describes the development of a web-based database to provide, with secure real-time pump characteristics. The aim is to monitor power, produced by individual pumps at fifteen-minute intervals. The pump data is coming from a secure web-based server using Java server pages (JSP) and server control statements. Pump characteristic curves can be modelled from this data, which pump or combination of pumps is the most efficient and cost effective. The recording of pump characteristics over the Internet provides an efficient monitoring and performance monitoring. The stored data may be used in the sophisticated scheduling scheme or to provide historical information for water de-

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Prof Lihua DONG
SHANGHAI MARITIME MUSEUM, China

Paper title: INTERNET-BASED OPTIMIZATION OF MACHINING PROCESSES

Authors: L.H. DONG, Y.L. ZHAO

Globalization of manufacturing makes the competition between enterprises more and more fierce in these years. The competitive ability of enterprise can be improved by reducing the cycle of products development and enhancing the response ability to market changes. The machining processes are very complex. Many cutting experiments need to be done where the products are developed. The cycle of products development can be shortened and cost of products can be optimized by optimization of machining processes. This paper presents an optimum method for determining the optimum parameters of the machining processes. A network architecture model is developed for determining the optimum parameters of the machining processes. The model is implemented on a computer with TCP/IP and is supported by Browser/Server model. The long-term goal of the model is to achieve the highest productivity is taken as objective function. Power of machine tools, cutting speed, feed rate, spindle speed and roughness are constraint conditions. The mathematics model for determining the optimum machining parameters is established. A value analysis method is used to determine the optimum machining parameters. Users input optimum machining parameters in the users will get the simulation curve of cutting force. The users can evaluate the machining process and decide the machining parameters via Internet.

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Mr Matthew DOVEY

OXFORD UNIVERSITY, United Kingdom

Paper title: A WEB-BASED SYSTEM FOR COLLABORATIVE ELECTRO-ACOUSTIC COMPOSITION

Authors: IAN GIBSON, MATTHEW DOVEY

This paper describes development of an online system for collaborative electro-acoustic composition. Traditionally, software systems for music composition have been single user systems. As accessibility to the Internet has increased, some systems have been developed where musicians can produce collaborative work. However, many such systems are based on the composition methods of the original single user systems. Various architectures are emerging based on WebServices or GridServices and these architectures are dynamically building systems out of distributed components. Projects are using these architectures to build collaborative environments. The aim of this paper is to take such concepts and tools from Service Oriented Architecture and applies them to develop software specifically for collaborative electro-acoustic composition over the Internet, allowing compositional tools and components to be published, distributed and used within a distributed environment. An objective is to explore and determine methods appropriate for this environment.

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Mr John a. GARCIA
KINGSTON UNIVERSITY, United Kingdom

Paper title: WEB-BASED INTEGRATION FOR VIRTUAL FACTORY IMPLEMENTATION

Authors: ANDY LUNG, DR. REDHA BENHADJ-DJILALI, JOHN GARCIA

As we are at the start of the 21st century, increasing competition in a global market enabled by advancements in information and computing technology (ICT) presents a challenge but also a window of opportunity to manufacturing companies. The 'technology led' business environment offers unprecedented channels to wider scope for market participation, leading to a push for manufacturing enterprises to adopt these technologies if they are to stay in business. However, it would seem that small and medium enterprises (SMEs) already find it difficult to utilise existing technologies such as Computer Aided Design (CAD) systems, let alone newer concepts such as Electronic Data Interchange (EDI), Product Data Management (PDM) and the still awaiting adoption concept of Supply Chain Management (PLM). The situation is further complicated by the rapid evolution of technologies from Local Area Networks (LAN)-based systems to Wide Area Networks (WAN)-based, and then to Internet-based systems that now are already being replaced by cloud-based systems. With these waves after waves of emerging technologies, SMEs are unlikely to be able to afford the resources to do the non-stop investment required with these new technologies. A more assuring approach has to be found to allow SMEs to embrace new emerging technologies while maintaining a good degree of interoperability. This paper explores the incorporation of web services on a manufacturing scenario by adopting a web based Virtual Factory (VF) modelling concept in which manufacturing data can be exchanged between manufacturing enterprises with freedom. In this concept, SMEs can aggregate their expertise in a collaborative environment to respond to a market opportunity. The VF model will play the role of a central data exchange for product design definition, partner location and resources in a manufacturing scenario. Suitable partners for the project are found, responsibilities right from the stage of design to manufacture, leading all the way to the final assembly and delivery, will be distributed amongst collaborating partners, completely via the Internet.

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Dr Ian GIBSON
LEEDS METROPOLITAN UNIVERSITY, United Kingdom

Paper title: FRAGMENTARY COLLABORATION IN A VIRTUAL WORLD: THE POSSIBILITIES OF MULTI-USER, THREE-DIMENSIONAL WORLDS

Authors: R. ENGLAND AND I. GIBSON

This paper discusses research into online, multi-user, interactive virtual education. A 3D virtual gallery with a shared whiteboard has been developed using multimedia software packages. Using this system, it is possible to create effective environments in which users may interact, communicate and collaborate with peers. We describe novel methods for overcoming problems associated with programming virtual environments. Technical, social and pedagogical issues are also discussed. Feedback is directed towards exploring applications for this environment.

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Mr Brian GRIFFITHS
BRUNEL UNIVERSITY, United Kingdom

Paper title: A VIEW OF E-DESIGN AND E-MANUFACTURING FROM AN INDUSTRY POPULATED BY SMALL, SKILL BASED COMPANIES

Authors: BRIAN GRIFFITHS, DIANE J MYNORS, PHILIP PURSLOW, MAJOR INDUSTRIALIST, DEAN ETHERIDGE AND JULIA MOORE

The design of components, manufacturing processes, associated equipment are frequently dependent on experience gained and redeployed by individuals. E-Design and e-Manufacturing is often considered from the perspective of a large company with the ability to invest in software and hardware. Recent studies conducted by the United Kingdom's Department of Trade and Industry have examined the use of tools (e-mail, web pages, monetary transaction tools etc); these studies have looked further down the supply chain one looks, then the less likely it is that a company has the most basic of electronic tools. This paper examines the behaviour of small companies, typically 3rd and 4th tier suppliers, and considers what the concept of e-Manufacture should/must mean to them if they are to survive in the global economy. The content of this paper is based on results of a six month study conducted by the United Kingdom's Department of Trade and Industry which is due to be completed.

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Mr Yanli HOU
NORTH CHINA UNIVERSITY OF TECHNOLOGY, China

Paper title: A STUDY AND DEVELOPMENT OF PDM SYSTEM BASED ON VISUAL STUDIO .NET

Authors: YANLI HOU, SONG LIN, HANGKONG OUYANG

There are some disadvantages in current PDM system such as low data security, depending, inadequate opening and expanding. We have researched and developed a PDM system by means of Visual studio .NET and SQL Server technologies. It is based on Internet/Intranet, object-oriented programming (OOP), distributing transaction, XML, transposition etc, which are closed to the development trend of modern database design, symmetric arithmetic and asymmetric arithmetic are adopted to ensure system data safety. We also combine the dataset object of ADO.NET model with

function of Visual Studio.NET with XML to produce BOM file in form of XML browsed by Internet Explorer. The current CAD/CAM software such as Pro-E integrated this platform of PDM system with interface to realize collaboration of management of products and datum. Finally, a case study is given. **Keywords:** Management Visual Studio.NET ADO.NET XML

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Prof Chen HUA
SHAANXI UNIVERSITY OF SCIENCE AND TECHNOLOGY, China

Paper title: COOPERATIVE DESIGN BASED ON MULTI-AGENT SYSTEM

Authors: CHEN HUA LIU CHAO CAO YAN ZHAO RUJIA QIANG XU

Competition demands better quality, faster delivery, and cost effective. Cooperation on multi-agent system is one of the recent technology developments benefiting development of information technology and its application in conventional design. In this paper, a review of the process of product design and its modeling and cooperative design is given first; the concept of agent oriented system is hierarchical architecture based on internet is proposed where the role of design as agents are clearly outlined; further consideration for system development interactive with collaborators and customers. This approach relies on the expert works to be conducted by agents and is relative practical. The proposed system is implemented and tested. Future work may incorporate artificial intelligence in decision-making. **KEYWORDS:** Multi-Agent System, Cooperative Design, System

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Dr Teruaki ITO
UNIVERSITY OF TOKUSHIMA, Japan

Paper title: AN APPROACH OF VIRTUAL ENVIRONMENT FOR PLANNING OF IMPLANT PLACEMENT

Authors: TERUAKI ITO

An approach of tailor-made design and production of guide templates for osseointegration is under study as a joint research project between Department of Mechanical Engineering, School of Dentistry at the University of Tokushima. The guide template is used for accurate operation to place screw of implants in the proper sites in terms of position as planned. What the project is pursuing is not the technology of standard production, but the technology of tailor-made design of templates and its production. The guide template plays a very critical role for tailor-made surgical operation, required by the society. The method in the project includes several steps: design based on medical data, planning of implant operation, designing of guide template operation, implant simulation based on the model, evaluation on physical prototype techniques, production of guide templates based on the design. Over this paper focuses on the design issue of template in virtual environment. The guide templates should be based on the consideration on where, in which direction, and how the screw should be inserted. This study uses a virtual environment where a design geometry of bone with bone density to make an appropriate planning of implant operation in intuitive manner, of which result can also be reviewed using some commercial software.

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Dr Wenlei JI
THE HONG KONG POLYTECHNIC UNIVERSITY, Hong Kong

Paper title: A MIXED INTEGER PROGRAMMING MODEL FOR INTEGRATING SHOP SCHEDULING

Authors: K. CHEN AND P. JI

Traditional Material Requirements Planning (MRP) ignores capacity constraints, times are fixed, and does not consider operation sequences of items. Such creates many problems on the shop floor for later production. Unquestionably, scheduling are closely interrelated and they should be integrated together to operations schedules for the shop floor. This paper presents a Mixed Integer F model which succeeds in a systematic integration of the production planning scheduling problems. The proposed model explicitly considers capacity constraints, sequences, lead times and due dates in a dynamic demand environment. The model is to seek the minimum penalty costs including tardiness and earliness costs. The model is operation schedules with order starting time and finish time. The model is verified with a commercial software package and tested with a small example. The model is further improved and meta-heuristics will be used to solve the model more efficiently.

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Prof Zhiqiang JIANG
ZHENGZHOU INSTITUTE OF AERONAUTICAL INDUSTRY AND MANAGEMENT

Paper title: BUYER-ORIENTED COLLABORATION AND STIMULATION OF E-SUPPLY CHAIN

Authors: ZHIQIANG JIANG, HUI WANG

The kernel issue of supply chain management (SCM) is collaboration and stimulation (i.e. Return Contract, revenue sharing contract, backups contract, option contract, etc.). The prevalent coordination and stimulation mechanism in traditional SCM. The stimulation have been well studied in SCM. However, its researching object is based on traditional SCM. With the development and popularization of Internet, and the application of E-Supply Chain Management (E-SCM), the electronic supply chain management (e-SCM) is formed. E-SCM is different from traditional SCM in that it has self characteristic in coordination and stimulation mechanism. It consumes the transaction cost of buyer and seller, and paying the definite coordination fee for e-commerce service provider. This paper studies the coordination mechanism of buyer-oriented E-supply chain management under the return contract. When the return contract is used, the supply chain gives the buyer a certain rebate rate to unsold products, and the supply chain management can be coordinated. The buyer always has the motivation to join the supply chain management, but the supplier's motivation depends on the rate of commission mechanism. When the rate of commission is lowered to a certain level, the supply chain management even without any extra incentive. However, when the commission is increased to a certain higher level, the supplier will not join the supply chain management even if the buyer offers the highest subsidy. When the situation is in two cases, i.e., if the buyer gives a certain amount of subsidy to the supplier, the supply chain still can be coordinated. The paper gives explanation to the failure of supply chain management and proposes a practical and operable plan of coordination and stimulation for supply chain management on the basis of return contract.

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Dr Austen JONES

VR and the real robot in real-time and 3) Plan the shaking of a suspicious squares method is used to find the orientation, rotation and translation of mapping the virtual environment to the real environment. Results revealed a real VR model and the real robotic scene of 3mm. Standard time to perform the task 288 seconds. Performance times to carry out the task showed rapid learning, time within 7 to 8 trials by 5 inexperienced operators. The learning rate was ca
Keywords: telerobotics, virtual reality, kinematics, least squares method

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Mr Karl KATEWU
DATA DIALOGS LTD, United Kingdom

Paper title: ARTIFICIALLY INTELLIGENT BUSINESS MODELLING SYSTEM

Authors: KARL KATEWU, DR DAVID BROWN, STEVE WHITE

Data Dialogs provides knowledgebase solutions for the customer interface. It includes companies from an increasingly wide variety of industry types including Electronics Furniture Manufacturing Printing Heavy Engineering Fire Service Distribution Telecommunications Data Dialogs' Eden Origin software has been designed to capture knowledge progressively, which has been designed for non-IT users. Working in the capacity of a Teaching Company Associate, the E engine is to be further enhanced with Artificial Intelligent techniques, such as Defining the system as a true Expert System for modelling various business domains. The Expert Systems decision making with the use of Fuzzy Logic. Enable the various business models, with the use of Neural Networks and where relevant efficient models with the aid of software evolutionary techniques. Using a Java users will be able to interact with the AI engine to carry out their various business within their Intranets or over the Internet.

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Mr Clive KERR
CRANFIELD UNIVERSITY, United Kingdom

Paper title: THE ELECTRONIC-ENABLING OF COMPONENT SPECIFICATION IN A DIGITAL ENVIRONMENT OF THE AUTOMOTIVE SUPPLY CHAIN

Authors: CLIVE KERR RAJKUMAR ROY

Within the e-Design environment of an automotive supply chain, designers have a range of tools, such as web-based CAD/CAM/PDM, to support the downstream detailing. However, there is a lack of support for upstream conceptual design. One of the activities is that of specifying component attributes since a concise and clear necessary input for collaborative product development. However, the specification between the vehicle assembler (OEM) and supplier often involves numerous iterations before an agreed specification is produced. The reason for this is various omissions and assumptions have to be resolved. Additionally the specifications are prepared as paper documents. This results in a lengthy cycle time for each iteration. A prototype tool for the electronic-enabling of the component specification is founded on ontology-based constructs in order to provide a shared structuring of a given automotive component. The specification of a component can be elected by the automotive OEM and issued to a supplier via a web-based platform.

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Mr Lei LI
GLASGOW CALEDONIAN UNIVERSITY, United Kingdom

Paper title: IMPLEMENTATION PERSPECTIVES OF DESIGN RE-USE THROUGH MANUFACTURING

Authors: LEI LI, K.CHENG, D.K.HARRISON

In today's competitive world, companies have to deal with the increasing demand with more features in manufacturing infrastructures. But even creating the similarity will derive a significant cost that often quoted as a large amount of money per part. Costs through designing new products will potentially influence the companies in a demanding market. Reducing cost is an essential and effective way for weak companies' survival in the scale of economies. Importing ability to find all similar given desired component is the key to reduce costs. A new internet-based design engine system could be developed and implemented to achieve our aim of retrieving existing parts that have similar shape and features to the given proposed system aims to provide an on-line intelligent support for determining matching parts and the related manufacturing data will be analyzed and included in a database.

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Dr Renwang LI
ZHEJIANG INSTITUTE OF SCIENCE AND TECHNOLOGY, China

Paper title: STUDY ON COMMONALITY-ORIENTED PRODUCT DESIGN METHOD AND APPLICATIONS IN MASS CUSTOMIZATION ENVIRONMENT

Authors: RENWANG LI GUONING QI

Competition in manufacturing industry has been focused on the ability of enterprises to meet unpredictable needs of customer since years ago. Under this background, market competition (MC) has become more and more important for lots of manufacturing enterprises. Carry out MC is to postpone efficiently "Customer Order Decoupling Point" (CODP) to improve all part-subassembly's commonality in the process of designing a customized new commonality-oriented product design method is elucidated; then, through 40 GB data of 3-serial industrial turbine in Hangzhou Turbine Ltd. (China) (HTL) in the past 30 years, a related prototype system is developed. The prototype system is divided into six modules: data importing module, data statistic module, result processing module, evaluation module, aided design module, maintenance module. Based on the system, given to illustrate the method for enterprise to postpone efficiently CODP. According to running the above system, it is proved that the new commonality-oriented method has important theoretical significance and good practical value, for example, Law is effective in HTL and so forth.

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Prof Shuangyue LI
SOUTHWEST UNIVERSITY OF SCIENCE AND TECHNOLOGY, China

Paper title: RESEARCH ON INFORMATION MODELS TO SUPPORT FIXTURE ASSEMBLY PROCESSES

Authors: SHUANGYUE LI

Sharing of information is an important issue in Networks Manufacturing. The models is an approach to support the intensive share of information required for Manufacturing through the manufacturing processes. This paper explores the structure of information models for supporting the related Fixture Design and Assembly Planning (FAP). This research presents the view that the information to support FD and FAP is captured according to process requirement of the information required of FD. The information required of the workpiece representation of the information about a workpiece machining and the information and FAP captures the information about of the fixture element locating, clamping processes assembly. The key problem discussed is the structure of these information would consider not only the information support for the functionality of FD and interaction in a shared environment.

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Dr Victor LO
THE UNIVERSITY OF HONG KONG, Hong Kong

Paper title: CUSTOMER-ORIENTED SUPPLY CHAIN PRACTICES MODEL - A STUDY IN THE PEARL RIVER DELTA CLOTHING INDUSTRY

Authors: VICTOR LO

The Pearl River Delta (PRD) in Southern China is a major area for the global clothing. The traditional mode of original equipment manufacturing (OEM) is still dominant. However, major customers in North America and the Europe are making additional suppliers, requiring them to enhance their capability in handling value-added R&D, product development, fashion design, and prototyping.

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Dr Joan LU
UNIVERSITY OF HUDDERSFIELD, United Kingdom

Paper title: BUILDING A WEB-BASED COUPLING QUOTATION SYSTEM IN ENGINEERING

Authors: MUMTAZ RIAZ, JOAN LU

Traditional quotation systems in most industries are paper based system, which is time consuming. An economical secure and reliable system is required for better performance. This research is to reach a solution to expedite this process and provide positive difference to the mechanical and manufacturing industry. A web-based system has been created for ordering and generating non-standard 2D designs for flexible series of predefined options and variable dimensional information. Flexible coupling output torque, transmit power, compensate for end movement and also protect against overload. The database system is implemented using MS SQL Server 2000. The system eliminated the attention of the drawing office for all non-standard coupling would assist some industrial sales and engineering teams worldwide, by providing up to date information and subsequently offering them the highest quality of service that a reduction in Lead Time (the amount of time, defined by the supplier that a customer request or demand) and engineering designs costs have been reduced in project.

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Dr Ramesh MARASINI
UNIVERSITY OF TEESIDE, United Kingdom

Paper title: APPLYING INTERNET TECHNOLOGIES TO MANUFACTURING : NORTH EAST REGION : BARRIERS AND OPPORTUNITIES

Authors: R MARASINI, K IONS, I HAMILTON, D SCOTT AND M AHMED

Internet technologies are increasingly being applied by UK business to facilitate trade, learn, manage company business processes and deliver services. Lamenting the benefits of such technologies but few manufacturing small to medium enterprises (SMEs), which account for 97.8% of manufacturing companies in the North East, have facilities and finance to benefit from its application. It is essential that barriers be removed to enable SMEs who are low investors in technology to benefit from technology. In collaboration with the University of Teesside and Warwick University and the North East RDA and ERDF funding, the Business-to-Business Manufacturing Centre has been set up to support SMEs in the North East (NE) region of the UK. The objective of the Centre is to improve the regional economy by assisting manufacturing SMEs to apply internet technologies to support product innovation, learning, improved manufacturing techniques and to develop products against ever shortening timescales. The centre aims to promote technology through targeted support and the development and demonstration of demonstrators. This paper reviews the applications and effectiveness of current initiatives available to SMEs in the region (e.g. NE-Life, LearnDirect) and describes the B2B-MC to support technology adoption. The major barriers to internet technology adoption and a brief introduction to the proposed technology also be presented.

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Mr Gregory MCCORMICK
BRUNEL UNIVERSITY, United Kingdom

Paper title: COMPONENTS OF DESIGN FOR THE SUPERPLASTIC FORMING

Authors: G MCCORMICK, P BROOMHEAD, J KULON AND D J MYNORS

Students engaged in the study of metal forming processes often start the process by indicating how many centuries ago the forming of metal may have begun. On the other hand, the superplastic forming process is a mere child in metal forming lineage. The versatile advanced sheet metal forming process that can be used to manufacture complex geometries. However, the superplastic forming process is often used by designers tend to design to the limitations of the older longer established processes to minimise the number of components within structures and to enter the market of new designs means that superplastic forming must be used to its full potential. To achieve this, designers must have access to easily available design tools to enhance the process. This paper examines the potential of elements of a design tool to support designers in the adoption of superplastic forming. The design tool uses computer technologies and has the potential to link complex representations of the workpiece being formed with design rules and process simulation packages.

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Dr Katina MICHAEL

UNIVERSITY OF WOLLONGONG, Australia

Paper title: LOCATION-BASED SERVICES: A VEHICLE FOR IT&T CONVERGENCE

Authors: DR. KATINA MICHAEL

Location-based services (LBS), more than any other mobile commerce application served to bring together information technology and telecommunications (IT&T) much has been written on the potential of LBS, literature on how it is a convergence is scant. This paper identifies and explores the various levels of technologies in mobile commerce by using three LBS cases that are representative market applications. The three leading edge product innovations to be analysed are Digital Angel and VeriChip. These innovations allow for the precise location of an individual wearing a Global Positioning System (GPS) watch or implanted identification (RF/ID) transponder. The companies market the personal location against the kidnapping of children, for medical monitoring purposes and commercial applications. Through literal replication the findings indicate that the technologies are prevalent: Personal Computer (PC), Personal Digital Assistant (PDA), Smart devices, Automatic Identification (auto-ID) devices such as RFID, Global Positioning System (GPS), Internet Protocol (IP), Internet/Intranet/Extranet Networks (PAN) and Wireless Networks such as Personal Communication System (PCS), Location Centre (MLC), World Wide Web (WWW), Geographical Information Systems (GIS), instant messaging (IM), location information/report, databases, servers and auxiliary services. It is predicted that eCommerce and mCommerce applications will increasingly converge to achieve their desired outcomes.

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Prof Craig MILLER
PURDUE UNIVERSITY, United States

Paper title: DEVELOPMENT OF AN INTERDISCIPLINARY PRODUCT LIFECYCLE MANAGEMENT (PLM) CURRICULUM

Authors: NATHAN W. HARTMAN & CRAIG L. MILLER

PLM is an expanding technology being adopted by corporations to manage which they do business. In doing so, corporations adopt product development strategies for e-commerce, including the integration of such facets of the enterprise as e-Engineering, Global Manufacturing, Digital Factory/Enterprise & Resource Planning, CAD/CAM/CAPP. This integration extends the product value chain to include sales and service, and education and training. The continued complexity of product development requires the technologies needed to document and secure them will require an integrated nature of these tools and techniques. At Purdue University, an initial simulation of an e-enterprise environment consisting of four areas: product lifecycle management, customer relationship management, enterprise resources planning, and supply chain management. This paper outlines a proposed interdisciplinary curriculum to situate product development, product lifecycle management, with an understanding of its relationship to other technologies, and position in the larger sphere of e-commerce. The main economic drivers for this curriculum are industry sectors under heavy pressure from global competition. Intelligent implementation of PLM and a trained workforce are key to sustained continued prosperity of the nation.

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Dr Diane MYNORS
BRUNEL UNIVERSITY, United Kingdom

Paper title: APPLYING E- TO TRADITIONAL MANUFACTURING DESIGN**Authors: J KULON, P BROOMHEAD, AND D J MYNORS**

The first industrialised countries that developed and became wealthy based on such as metal forming are now, centuries later, being faced with the reality of a global economy. An economy where regions of the world can manufacture metal for a fraction of the cost associated with the original leading industrialised countries, faced by the original industrialised countries, combined with the apparent demand for a workforce to move away from mechanical and manufacturing engineering, the ageing workforce whose skills are being lost as they retire and an industry that cannot compete if the amount of value adding capability can be enhanced. This paper describes the development of a web based tool focused on enabling the generation of a hot fire component profile. The aim of the tool is to lead designers through the design process, applying appropriate manufacturing rules as well as company capabilities to be complete. The tool is complex taking into account machine, material and forging company specific considerations. Keywords: Web-based data, Simulations, virtual design

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Mr Stephen NAPPER
KINGSPAN METLCON, United Kingdom

Paper title: A WEB ENABLED DESIGN ENGINEERING AND DETAILING SYSTEM FOR MANUFACTURE IN THE MODULAR BUILDING INDUSTRY**Authors: STEPHEN NAPPER**

The modular building industry presently has a, at best, disjointed attitude to design and detailing of its products. This paper proposes a uniform, engineered, web based modular industry has a second problem in that it is seen as a supplier of site built PortaCabin's, and is trying to re-develop this. To this end it is encouraging AI based systems. Architects require individuality, and none of the envisaged 'blocky' products expected of modular manufacturing. This in turn means one off designs, no repeatability, and thus each design is a one off. The proposed system enables a repeatable, rules based design process that will allow the end user (customer) to design required, without worrying about the technical aspects, whilst allowing the modular designer to detail the components and loads required. Each class of user views a particular view of the common data, specific to them.

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Dr Nikos PAPAKOSTAS
UNIVERSITY OF PATRAS, Greece

Paper title: AN INTEGRATED SOFTWARE FRAMEWORK FOR SYNCHRONISING BUSINESS FUNCTIONS OF A SHIP-REPAIR YARD**Authors: G. CHRYSOLOURIS, S. MAKRIS, N. PAPAKOSTAS AND D. MOU**

The ship-repair sector is characterized by uncertainty and unpredictability, since the repair performed is specified roughly before the arrival of the ship to the shipyard and is only identified during the execution of the ship repair. Therefore, the specification of the repair of the ship evolves during the lifecycle of the ship repair contract, from the initial estimate to the final invoicing of the work. This paper demonstrates an integrated software framework modelling the evolution of the work list during the ship-repair, while supporting a set of critical business functions, such as cost estimation and production planning.

repair contract. The proposed software environment allows for following up on according to the newly identified work. The proposed software system is demonstrated scenario, and proves its capability to deal with the particular requirements environment. It is shown how the ship-repair work can be modelled to information that is necessary to perform critical functions, such as estimating repair contract and planning its execution.

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Prof Nikos PAPAKOSTAS (2)
UNIVERSITY OF PATRAS, United Kingdom

Paper title: A WEB-BASED SOFTWARE ENVIRONMENT FOR PLANNING AND CONTROLLING SHIP-REPAIR CONTRACTS ACROSS THE SUPPLY CHAIN

Authors: G. CHRYSOLOURIS, S. MAKRIS, N. PAPAKOSTAS AND V. XANTHAKIS

A current trend of manufacturing companies is to maximize their communication capacity, integrating their operations with these of their business partners. The Internet presents the application of web-based software technologies for supporting a set of business processes related to the maritime industry. In particular, the ship-repair work is discussed, involving the transactions among the ship-owner, the shipyard, the subcontractors and the shipyard's subcontractors. The software implementation is based on the Internet, representing a cost effective, simple to configure and use, platform independent environment, allowing for small enterprises with moderate information technology to participate in the supply chain network. The case study addressed focuses on the functions taking place in the process of planning and controlling the preparation of a ship-repair contract in a number of critical ship-repair nodes. The web-based system demonstrates how the members of the supply chain may work together in the same processes, fostering the efficient communication and information sharing across the supply chain actors.

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Miss Ilona POLLOK
EDS OPERATIONS SERVICES GMBH, Germany

Paper title: ELECTRONIC DATA COLLECTION WITHIN THE AUTOMOBILE SUPPLY CHAIN: THE INTERNATIONAL MATERIAL DATA SYSTEM AS AN EXAMPLE FOR ELECTRONIC COLLABORATION

Authors: I. POLLOK, B.K. TEMPLE, D.A. EDGAR, D.K. HARRISON, S.C. KINCH

The Internet application, International Material Data System (IMDS) was developed to globally collect material data, which will later be needed by the OEMs for compliance in accordance with the EU Directive 2000/53/EC concerning End-of-life vehicle recycling. Directive demands 95% recycling of the mass of a car by 2015. The application was developed by the IT service provider EDS and eight OEMs so that tier "n" suppliers can provide the material data for their products and pass them to the next tier in the supply chain. Finally, the combined data can be down-loaded from the system by the OEMs to document the basic substances and materials in their products. For successful implementation, it is important that all tiers within this chain act efficiently and in accord. The bottom line of the application implies that the lowest tier must be the first to provide information. If of the suppliers in the chain is provided late, the whole process is delayed. In the automobile supply chain is involved three influential facts could be detected: firstly, the infrastructure should guarantee a good Internet access; secondly, the deployment of the

company need to be aware of the data demand and have to cooperate in order flow and thirdly, the relationship between the companies has to be based on co-

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Mr Yaroslav POPOV
SOFTSERVE, Ukraine

Paper title: WEB-BASED SVG EDITOR WITH CUSTOMIZED FUNCTIONALIT

Authors: YAROSLAV POPOV, S?REN THOMSEN, ALLAN TR?RUP DREMS

Vikan A/S is a Danish manufacturer of industrial cleaning tools and applies the Vikan Hygiene System. In accordance with this approach production cell is divided into coded cleaning zones. Vikan A/S offers a range of cleaning tools in the same or different zones. Each tool has to be used just in 'its' zone. The paper will describe a recently developed web-based application that makes it possible for users to create 2D and 3D dimensional drawings of colour zones of production cells and specify the list of equipment from database to be used in each zone. The proposed approach is implemented in XML-based graphics format: <http://www.w3.org/TR/SVG>) and SVG Viewer (<http://www.adobe.com/svg>). Mostly the business logic of the application is processed on the server side and was developed using JavaScript, DHTML, XML and Remote Web Services (<http://www.rdsdeveloper.com/ASPTutorial.html>). Such approach made it possible for users to work off-line. After downloading the starting web page they need to be connected to the Internet only for saving and printing purposes. The server part of the application is implemented using ASP and ASP.Net. The paper will include description of the application functionality together with the screenshots from the production site.

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Mr Muthu RAMACHANDRAN
LEEDS METROPOLITAN UNIVERSITY, United Kingdom

Paper title: SCALABLE ARCHITECTURE FOR THE MULTI-DEVICE INTERNET

Authors: MUTHU RAMACHANDRAN AND PAT ALLEN

The aim of this paper is to describe how to design a scalable architecture for a multi-device internet system. The requirements for these applications come from various different browsers and hardware capabilities. The system needs to be designed to cater for those requirements and constraints that are imposed by different devices. An architect is to transform those product requirements into realisable functionality. The paper employed a range of architectural design techniques which are a combination of traditional architecture and automated design patterns. Apart from Computers, the market for various other devices is increasing rapidly such as mobile phones, PDAs, ICDs for Interactive TV and the Web access is growing faster than predicted. Many countries are rapidly, for example on iDTV, NDS, MSTV, NetBox, Sky Digital, Bush, and iOS etc. It is expected that there is about 7 to 8 million users in the UK for Sky Digital, forecasted about 50 million users in the US who use iDTV. Therefore Volantis is developing a system which is capable of transforming internet applications onto various devices and which has the knowledge about that device. Figure 1 shows a multi-device internet system which is capable of generating internet applications for any device which has the knowledge of. One of such a product known as Marine is a solution for pervasive multi-device internet applications. One of the key concepts is the separation of content and its presentation. Content (consists of static and dynamic site information) is the basic information that a site needs to deliver to a user. The designing such a system is "Design once and deploy across multi devices"

information, for example a series of paragraphs describing a company. Alternatively, for example part of a product catalogue, retrieved from a database customer enquiry. Layout is the physical placement of content on the display of Whereas content is essentially device independent, layout is device dependent for the information being displayed varies depending on the shape of the Thematic information governs the stylistic aspects of a site. We term the totality across multiple devices, a theme (represents the stylistic aspects of the presented and its appearances).

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Dr Heather REA
HERIOT-WATT UNIVERSITY, United Kingdom

Paper title: BUSINESS BARRIERS TO THE E-SOURCING AND REUSE OF M COMPONENTS

Authors: H J REA, J R CORNEY, D E R CLARK, N TAYLOR

Manufacturing enterprises around the world have archives of tens of thousands that define the components they manufacture. Technologies are emerging from projects that will make it feasible in the near future to conduct global 'shape' collections. In principle such 3D-search engines could revolutionise the source components and enable a dynamic market for reselling existing production to presents an investigation of the commercial and business aspects of this emerg 3D Internet based part sourcing and reuse). The state of the art in part sourcing estimates of the potential benefits of Internet based part sourcing and reuse outline ownership issues of CAD/CAM data and tooling and identify barriers, business, to any form of e-Sourcing which would enable secondary use. The p the ability to prohibit the physical production of publicly circulated 3D models is of this trading system. Consequently the paper concludes with details of a pr Public Licence" which is designed to protect the IP of manufactures while e engines to indexing components.

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Mr Jun REN
UNIVERSITY OF EXETER, United Kingdom

Paper title: A METHODOLOGY FOR AGILE PARTNER SELECTION

Authors: J.REN, Y.Y.YUSUF, N.D.BURNS

Within the operational function of an agility-based company, one of the prime re evaluation and selection of partners. This paper proposes a decision making structure for the selection of partners. The methodology allows for the evalua help organisations become more agile. The use of the Analytic Hierarchy P decision support model to aid decision makers in selecting suitable agile partne in this paper. The block diagram of the selection as well as a hierarchical model some Agile decision domains and attributes are identified. Based on questio weights of all Agile dimensions, decision domains and attributes were determi analysis reveals that all Agile attributes selected show a high level of interna they provide a validated base for our research. Finally, an example problem is u methodology

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Mr Tony RHOADES
UNIVERSITY OF LIVERPOOL, United Kingdom

Paper title: BENEFITING FROM MODERN E-COMMERCE

Authors: MCMAHON. A.G., RHOADES. A.D.G., SUTCLIFFE. C.J.,

The 21st century is built on a platform of information technology (IT); and business is becoming more robust by its application, resulting in better communication between the various stakeholders. Universities everyday engage in co-operations with each other on an increasing basis, forming partnerships of high importance so as to set an agenda for the future. Many of these partnerships revolve around developing new products, procedures and products, and as such require a high degree of communication mechanisms to both function effectively, and to capture the knowledge in the transaction. It is the linkages between transactions that are of focus here. This article examines the application of modern commercial PLM (Product Lifecycle Management) to university lead design research projects. The University of Liverpool asks "What is the true research potential and operating performance by delaying the implementation of modern enabling technologies to research?" The Department of Engineering has deployed an Aerospace industry PLM solution as a means and a mechanism for managing collaborative transactions on funded research projects to maximise efficiency whilst minimising costs. This article reviews the challenges inherent in a change management process and identifies the lessons learned from the implementation process to draw a conclusion with an examination of return on investment, presenting perspectives on the expenditure required, what is and is not a cost, and some novel considerations on the investment in the digital generation may fit into the global economy.

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Ms Christin SCHMIDT
HTW-UNIVERSITY OF APPLIED SCIENCES, SAARBRÜCKEN, Germany

Paper title: VIRTUALITY-BASED UNDERSTANDING SCHEME (VIRUS): A HYPOTHESE SUPPORTING RESEARCH AND BEHAVIOUR-ORIENTED MANAGEMENT OF VIRTUAL TEAMS

Authors: CHRISTIN SCHMIDT, DR. BRYAN K. TEMPLE, DR. ANN MCCREARY, NEWMAN PROF. DR. RER. POL. SUSANNE C. KINZLER

In response to rapidly changing environments and developments in Communication Technologies (ICT), especially organizations in Engineering are forming Virtual Teams (VTs). Advantages of VTs span from independency of time and place, source knowledge on a global scale to time and cost savings [Duarte & Snyder al. 1995; Lipnack & Stamps 2000]. However, both managers and scientists have to build upon a common understanding of VTs. Classifications diverge as to what type of VTs and how degrees of virtualization in VTs can be identified. This creates difficulties for managers striving to implement findings. Furthermore, research on management of potential individual dysfunctions arising out of virtual working environment [Türk [1976] mismanagement of these dysfunctions can enhance overcomplexity and overregulation as corporate pathologies and result in higher financial and psychic cost. Therefore, the aim of this project is to develop the Understanding Scheme (VirUS) as a typecast of VTs. VirUS serves as a basis for Türk's pathology concept. This involves an analysis of the relation between certain and pathological states. In case a relation is spotted, a diagnosis tool is supplemented with outlining managerial implications to improve the specific path

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Mr Gui yun TIAN (3)
UNIVERSITY OF HUDDERSFIELD, United Kingdom

Paper title: A FACE-BASED COMPUTER LOG-IN SYSTEM

Authors: STEPHEN KING GUI YUN TIAN DUKE GLEDHILL STEVE WARD

With the wide use of computers, It is difficult for end-users to cope with many passwords. This paper introduces using a low cost web-cam and face recognition face-based computer log-in system. By extending our work on robust face recognition construction is introduced. The system performance is evaluated. Conclusion is also presented

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Mr Peter VAN LIESHOUT
CORUS RESEARCH, Netherlands

Paper title: PRODUCT DATA TRACKING, THE WAY TO GO IN AN INDUSTRIAL LABORATORY ENVIRONMENT

Authors: A. HOGENDOORN, G.E.N. KUIPER, P.T.M. VAN LIESHOUT, M. NO

In the research laboratories of the steel company Corus many different simulations are standardly done to simulate the various phases of the steel production. Serially generate large amounts of measurement and control data, which are stored in file servers. Within a collection of several ten thousands of files that are scattered in different departments it becomes a time consuming task to find and retrieve the required data. An efficient manual data retrieval process a so-called product tracking system has been developed. As all research equipments make use of data acquisition and control software, the generated data files are stored on a central file server. To ensure data files, the accompanying metadata is stored in a relational database. Through a web interface, all interested users within the Corus research organisation can access the data warehouse. Data files can be downloaded to local PCs for further analysis.

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Mr Jason VARLEY
NATIONAL UNIVERSITY OF IRELAND GALWAY, Ireland

Paper title: A STAGED EBUSINESS DEVELOPMENT MODEL

Authors: DR. OWEN MOLLOY, JASON VARLEY

With hundreds of vendors of eBusiness and eCommerce solutions, ranging from simple web designers to ERP system integration specialists, it is easy to understand why many small and medium enterprises (SME's) trying to develop an eBusiness strategy can easily become overwhelmed by the information and marketing. Within this paper we present a staged eBusiness development model complimented by our technology framework. The assessment metrics are used to assess the current eBusiness capabilities, and advise them on the areas of technology, management, and business operations to progress to the next stage of the model. The approach taken to develop the model has been to design five levels of eBusiness capability, these range from having a simple eCommerce website to customer transactions, to a stage of eCollaboration, where levels of collaboration are high.

sharing are defined and partners goals merge to improve overall services, proc returns. We show the development of technology requirements throughout the the evolution of data format standards, transportation techniques and secur Finally we explore the changes in trading partner relationships as organisations levels of the model where trust in relationships becomes vital.

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Mr WANG
UNIVERSITY OF NEVADA, LAS VEGAS, United States

Paper title: PRODUCT LIFE CYCLE MANAGEMENT ?AN ESSENTIAL COMF AGILE MANUFACTURING

Authors: KIRAN KUMAR PUSTHAY AND Z. WANG

This paper describes the need for an effective product life cycle managem coupled to a shop floor control system. PLM is enterprise wide web centric a that can manage all product related data throughout its life cycle. Continuous of demand makes it difficult for modern manufacturing companies to rapidly adap and sustain competition from their counterparts over the globe. Even though cr manufacturing tries to address this issue to some extent, the integratic manufacturing system in order to adjust to the rapid changes in the products de with respect to the customers needs is still a problem faced by the modern m Use of proper networking system and good shop floor control software can these issues to a major extent. Apart from good shop floor control system I coupling product life cycle management component for achieving continuous profitability. Few case studies are used to support this argument.

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Mr Xiao-lin WANG
ZHEJIANG UNIVERSITY, China

Paper title: RESEARCH ON THE METHOD OF MULTILEVEL FUZZY EVALU/ PERFORMANCE OF LOGISTICS CENTER PROCESSING

Authors: XIAO-LIN WANG, ZI-CHEN CHEN

The logistics center processing includes extensive contents. In this paper, th logistics center processing is analyzed and established by fuzzy evaluat assigning weight to a set of influencing factors, it is implemented that performa center processing is evaluated synthetically. By means of derivation and c definite evaluation result is given.

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Mr WANG (2)
UNIVERSITY OF NEVADA, LAS VEGAS, United States

Paper title: DEVELOPMENT OF AN AGILE MANUFACTURING SCHEDULING SHOP FLOOR PRODUCTIONS

Authors: P. VENKAT, K. MATTA, AND Z. WANG

Manufacturing is the application of physical and chemical processes to alter geometry, and /or appearance of a given starting material to make a product. Manufacturing also includes the assembly of multiple parts, to make products. To accomplish manufacturing involves a combination of machinery, tools, and labor. Manufacturing is carried out as a sequence of operations. Each operation brings the product closer to the desired final state. The modern environment of discrete parts manufacturing is sophisticated and intensely competitive. It is characterized by short product life cycles, product diversity, and customer demands for both excellent quality and time to market. Ongoing research is focused on developing a finely tuned process, capable of handling a wide range of quality, variability, and time pressures imposed by the marketplace. The primary goal is the reduction of manufacturing lead-time to the minimum possible, and achieving a high level of process control. The benefits of such a system would include greater responsiveness, better use of manufacturing resources, reduced inventory levels, and faster turnaround on customer orders.

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Mrs Elizabeth WILLIAMSON
GLASGOW CALEDONIAN UNIVERSITY, United Kingdom

Paper title: INFORMATION SYSTEMS INFLUENCING PARTNERSHIP INTEGRATION IN SUPPLY CHAIN MANAGEMENT

Authors: ELIZABETH A WILLIAMSON, DAVID K HARRISON, MIKE JORDAN

In order to improve effectiveness of the chain and compete in today's very competitive markets, businesses are using information systems to improve operational efficiency in Supply Chain Management. These systems include EDI, ERP systems and the Internet. The Internet has vastly improved inter-organisational information systems capability and has been widely adopted as a routine platform in many companies. This involves increasing communications with partners such as suppliers and sharing crucial product information. Therefore increased focus is put on partner relations and organizations affecting this close collaboration. These organisational factors include trust, communication, and resistance to change of partners. Also, while close strategic partnership adds value, they are costly to develop, nurture and maintain. The number of companies a company can build and maintain is also limited. Therefore it is important that the relationship with a partner is built, in order to maximize SCM effectiveness and to improve information sharing and participation. This paper evaluates information systems and Internet-based systems and organisational factors influencing partnership integration in Supply Chain Management (SCM). Studies carried out within two companies illustrate the

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Dr Yongsheng YANG
SHANGHAI MARITIME UNIVERSITY, China

Paper title: SUBDIVISION PROJECT METHOD FOR DETECTING GOUGING INTERFERENCE IN 3-AXIS NC MACHINING

Authors: Y. S. YANG H.R. SHEN W. DONG J.ZHANG

Now 3-axis NC machining still holds wide ranges of application domain. Presently, a kind of "Subdivision Project Method" for detecting gouging interference in 3-axis NC machining. The basic idea of this method is as follows. First, the machining surface and the tool surface are triangularly subdivided, obtaining two sets of plane pieces. Second, assuming the cutter is located at an initial position with interference-free, the surface is imaged that the cutter is moved along axis vector towards the part surface.

the first contact point between cutter and part surface. So the solution of the problem is then simplified as the seeking of an intersection point between two sets of trajectories. For the sake of decreasing greatly the measuring time, the concept of "Interference Point" is introduced to decrease the whole areas of interference detecting, a differentiating primary-detecting and detailed-detecting is adopted, and the algorithm is applied to restrict the cutter and part surface in interference detecting is set up. The purpose of "Subdivision Project Method" is to solve interference checking problem surface cutter, and to provide a common algorithm for gouging inference in 3- ε and to supply a kind of tool in controlling machining quality for web-based system.

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Mr X.I. YOU
 -, United Kingdom

Paper title: WEB-BASED JAVA ANALYSIS SOFTWARE FOR ENGINEERING OF AXISYMMETRIC PLANE STRESS PROBLEMS

Authors: X. L. YOU

Axisymmetric plane stress problems can be found in many engineering applications such as speed gears, fly wheels, turbine rotors and circular disks subjected to internal or temperature changes. The elastic-plastic analysis of these engineering problems become an important issue in solid mechanics and engineering applications. The development of software is important for researchers and engineers to tackle these advanced analysis techniques through internet. In order to develop the software and accurate numerical method is proposed to predict deformations and stress plane stress problems. The governing equation is derived from the basic axisymmetric plane problems in elasticity and flow theory in plasticity. It is solved by numerical method of boundary-value problems. Java is a platform-independent language. It is used to generate applets of the developed numerical methods applications. The Hyper Text Markup Language (HTML) is used to produce a user-friendly web-based interface is created for users to input the information for analysis, submit the information as a batch job to a server for numerical calculation, generation, and send the images and output data back to the clients.

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Mr X.I. YOU (2)
 -, United Kingdom

Paper title: WEB-BASED COMPUTER SIMULATION OF DEFORMABLE SURFACES

Authors: X. L. YOU (OTHER AUTHORS PENDING)

Computer simulation of deformable surfaces such as flexible fabrics and thin sheets is applied in industries. The web provides a useful environment for such applications. In this paper, we first present a useful environment for such applications. One is how to perform web-based computer simulation of deformable surfaces, two issues should be considered. One is how to improve the computational performance of simulation methods and the other is how to integrate the simulation methods into web-based applications. In this paper, we first present a physics-based modeling method. Both global and local deformations are investigated. A local region on a surface is identified. It is connected to the global conditions of deformation consistency. External forces are applied within this unified mathematical expression is introduced to describe concentrated force loads and area distribution forces. The deformed shape of the surface under loads is determined. The developed deformable model is implemented as a web-based application.

using Java and Java 3D API. The system consists of clients and a server. Client web browser to view, send, receive and manipulate information. And the server PC to process data, perform calculations and generate deformed surfaces. Examples are presented to demonstrate the applications of the developed approximation simulation of deformable surfaces.

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Mr Changyou ZHANG
SHIJIAZHUANG RAILWAY INSTITUTE, China

Paper title: THE SECURITY AUDIT MECHANISM IN ENTERPRISE E-COMMERCE

Authors: ZHANG CHANGYOU, PIAO CHUNHUI, ZHANG LIQUN

The security has become a proceeding issue need to be solved in enterprise e-commerce urgently. For the diversification, complexity and indetermination of guilty third parties, the integrated security audit mechanism is becoming the necessary condition for the e-commerce platform. The clues created in the security audit mechanism record the abnormal or fraudulent behaviors and help the administrator to find the cause. Firstly, the goal of the secure audit mechanism is brought forward in this article. Then the research fruits in the security audit fields and the peculiarities of enterprise e-commerce platform, the secure audit mechanism for enterprise e-commerce platform was proposed. This audit mechanism include five main parts, such as system perimeter authentication, privilege management, intrusion alert, audit quoting and so on. Secondly, the first door of the system. The second and the third model are the basics of the algorithm of intrusion alert adopts the analogy reasoning based on grey system theory. To enhance the quoting ability of audit clues, we protect the audit data by means of long-distance backup.

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Paper title: RESEARCH ON THE E-COMMERCE PERFORMANCE EVALUATION MODEL

Authors: ZHANG LIQUN, ZHANG CHANGYOU

With the rapid development of information technology, E-commerce has gradually become the new activities in the world. However, because of different scales and industries of corporations, the model and effect of implementing E-commerce are also different. A scientific E-commerce performance evaluation model is one of the key parts in the implementing process, and it is also helpful for a firm to decide whether or not to carry out E-commerce healthfully and successfully. Study on E-commerce Performance Evaluation has become a research hotspot. On the basis of existing performance evaluation models and the characteristics of the E-commerce, this paper proposes a new multi-level E-commerce performance evaluation model according to enterprise, the scale of enterprises and industry characteristics. This E-commerce performance evaluation model is a combination of quantitative and qualitative analysis system. The analysis of the cost and profit, the analysis of sensitivity, and the analysis of risk performance means the value sum that includes the consumer value, the supplier value and information value.

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Paper title: THE CONCEPTUAL MODEL AND KEY TECHNOLOGIES OF THE

Authors: ZHANG WENLEI, WANG CHENEN, MA MINXU, LI HAIYUE

PLM - a completely new business approach -has been evolved from the ea years, and It is important to note that PLM is not a definition of a piece, or piece is a definition of a business approach to solving the problem of managing th product definition information—creating that information, managing it thrc disseminating and using it throughout the lifecycle of the product. PLM is not jus is an approach in which processes are as important, or more important than c note that PLM is as concerned with "how a business works" as with "what is b PLM solutions can offer a concrete integration environment to effectively develc data of products and processes; also can be the utmost efficient tool for (systematic study of the main solutions and new front technologies of PLM, thi the definition, status, functions and prospect of the PLM and the conceptual m business process lifecycle management model are built too. Furthermore, structure, key technologies and dominant features of PLM are concluded ar Finally this paper endeavored to make the comprehensively analysis and cc PLM.

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Mr Yun ZHANG
ZHEJIANG UNIVERSITY OF SCIENCE AND TECHNOLOGY, China

Paper title: RESEARCH ON THE STRATEGY AND IMPLEMENTATION METH LOW-COST MODERATE AUTOMATIZATION SEMIFLEXIBLE MANUFACTUR FOR LEATHER ENTERPRISES

Authors: YUN ZHANG

In order to enable leather produce enterprises to find their proper positions and strategies, this paper proposes a new conception – Low-cost Modera Semiflexible Manufacturing System (LC-MA-SFMS), and also researches the general technology of LC-MA-SFMS for leather produce enterprises. This pape development of manufacturing methodologies, then discusses the basic econ LC-MA-SFMS and discusses the importance of LC-MA-SFMS as an ente manufacturing enterprises, base on these, the author presents that LC-MA-("principal production mode of 21st century for leather produce enterprises". provides a general technology framework of LC-MA-SFMS from the point of vie Key words: leather produce enterprises low-cost moderate automatiz manufacturing system

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Prof Changyou ZHANG (2)
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Paper title: THE E-BUSINESS PLATFORM STRATEGY FOR SMALL ENTERI

Authors: PIAO CHUN-HUI, ZHANG CHANG-YOU

There are more than ten millions small enterprises in China. Only 5 perc computer systems and most of the systems run in quite low level. In the inform

improve market competency is concerned by all the businesses. This paper at the strategy of enforcing e-business in small businesses. It analyzes the main p small enterprises face when they try to apply information technology. It propo way to build computer application systems and finally realize e-business. A problems, information resource planning, information monitoring mechanism management ideas are deeply discussed. A solution with highly feasibility, economic efficiency is described. Network information security is a very constructing computer application systems. According to the practical co businesses, this paper introduces a security solution which is low cost, easy to appropriate security level. This security strategy follows J2EE standard and i certificate. The primary object of this investigation is to find out an available ar guide small enterprises realize electronic business.

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Prof Changyou ZHANG (3)
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Paper title: IMPROVED SCHEME OF DOUBLE-DIRECTION SIGNATURE IN E

Authors: ZHEN LI-JUAN, ZHANG CHANG-YOU

SET is an international standard applied to E-Commerce security. The intro Direction signature in SET is an critical innovation of SET. It avoids the f merchant and bank, realizes the non-repudiation of the customer. But, the signature scheme doesn't consider the non-repudiation of the merchant and t the security of SET to a certain extent. Besides, the digital digest algorithm Direction signature is SHA-1, with the improvement of the computer's enhancement of the calculation speed, it will become more and more secure. If hash function and the time stamp are introduced, the both sides' non-rep Commerce is realized. Through the theoretical analysis and test, a conclusion improved scheme has very good security.

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Mr Xiyong ZHU
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Paper title: RESEARCH ON MASS CUSTOMIZATION OF MIS SOFTWARE B
COMMON BUSINESS APPLICATION TEMPLATES WAREHOUSE

Authors: ZHU XI-YONG

The development of management information systems(MIS) has entered customization. Most techniques and methodologies that are currently us customization of mechanical products, such as modularization and componenets applied to MIS production. Components technology seems to be a promising MIS mass customization by enabling application construction through "plug ar the middleware supporting this approach is still complicated and difficult to use. effective approach is using templates, which are nearly complete applic completed parts include applications architecture and reusable components. I present a brief survey of common business objects and processes that are de management informations systems, then I conceptualize templates-base presenting the common business application templates warehouse and the arc integrated MIS mass customization toolkit that I have been working for years example showing the practicability of these approaches.

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